

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDWARD H. STUPP and BABAR A. KHAN

Appeal No. 1997-3728
Application No. 08/323,311

ON BRIEF

Before KRASS, FLEMING, and BLANKENSHIP, Administrative Patent Judges. BLANKENSHIP,
Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of
Claims 6-9.

We affirm-in-part.

BACKGROUND

The invention is directed to a process for manufacturing an active matrix electro-optic display device, for use in an apparatus such as a color projection television. Claim 6 is reproduced below.

6. A method of forming an active matrix electro-optic display device comprising a pair of walls, at least one of which is optically transparent, an array of pixel electrodes, an array of switches associated with the pixel electrodes, an array of row and column electrodes interconnecting the array of switches and pixel electrodes, and an array of storage capacitors, each storage capacitor connected to a pixel electrode of the array of pixel electrodes, the arrays arranged on the inner surface of one of the walls, a counter electrode on the inner surface of the other wall, and an electro-optic material filling the space between the walls, the method comprising the steps of:

- a) forming an array of islands of a conductive material,
- b) forming a layer of a dielectric material on each island of the array of islands,
- c) forming the array of row electrodes on the array of islands having the dielectric layers, to thereby form the array of storage capacitors,
- d) forming the array of pixel electrodes so that each pixel is located adjacent to a storage capacitor, and
- e) electrically connecting each of the islands to an adjacent pixel electrode.

The examiner relies on the following references:

Okubo	4,431,271	Feb. 14, 1984
Morozumi	4,582,395	Apr. 15, 1986

Japanese Published Application 63-70832¹ (Matsueda) March 31, 1988

¹ An English translation of the document has been supplied by the USPTO Translations Branch, dated
(continued...)

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Claims 6-9 stand rejected under 35 U.S.C. § 103 as being unpatentable over Matsueda, Okubo, and Morozumi.

We refer to the Final Rejection (Paper No. 12) and the Examiner's Answer (Paper No. 18) for a statement of the examiner's position and to the Brief (Paper No. 17) for appellants' position.

OPINION

Grouping of Claims

Appellants state that Claims 6-8 stand together, but Claim 9 stands alone. (Brief, page 8.) Appellants submit arguments consistent with the stated grouping. Accordingly, we will consider the two groups separately. See 37 CFR § 1.192(c)(7).

Claims 6-8

The examiner has rejected Claims 6-9 under 35 U.S.C. § 103 as being unpatentable, with Matsueda, Okubo, and Morozumi submitted as providing evidence of the obviousness of the subject matter. (See Final Rejection, pages 2 and 3.) Appellants respond that, although an embodiment disclosed by Matsueda is similar to appellants' disclosure (see Brief, paragraph bridging pages 10 and 11), the reference contains a deficiency that is not remedied by the teachings of the other references.

¹(...continued)

June 1995. Since the file wrapper does not reflect that a copy has been supplied to appellants, we are providing a copy of the translation (with notations by the examiner) with the instant decision.

“[W]hile Matsueda teaches a similar sequence of processing steps, Matsueda’s islands are not electrically conductive, but rather a semiconductive material whose conductivity is dependent upon the bias conditions present in the surrounding structure.” (Id. at 12, emphasis omitted.)

According to appellants, as set forth on pages 10 through 12 of the Brief, in their process the islands are “degeneratively doped,” unlike island 88 in Matsueda. As a consequence, in the capacitor electrodes disclosed by Matsueda, the electrodes are conducting only under bias conditions, rather than under all conditions. (See id. at 14 and 15.)

The step set forth in Claim 6 that corresponds to the formation of the “conductive material,” which in turn forms an electrode of the storage capacitor, is the first positively recited step: “forming an array of islands of a conductive material.” We note that in the appendix of claims submitted with the Brief, the corresponding step improperly recites changes that were proposed in an After Final amendment submitted January 18, 1996 (Paper No. 14): “a) forming an array of islands of material which is electrically conducting under all operating conditions.” However, as appellants were notified by the examiner in Paper No. 15, the proposed amendment was not entered, and would not be entered upon the filing of an appeal. Appellants acknowledge that the amendment was not entered on page 3 of the Brief. Thus, the claims that are before us recite that an “array of islands of a conductive material” is formed.

Claims are to be given their broadest reasonable interpretation during prosecution, and the scope of a claim cannot be narrowed by reading disclosed limitations into the claim. See In re Morris,

127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). We do not agree with appellants that Claim 6 requires that the capacitor electrodes (or “conductive material”) be electrically conducting under all conditions. Although the specification discloses that in the preferred embodiment the islands are rendered “conducting under all operating conditions,” (specification, page 8), we decline to read disclosed limitations into the claim for the purpose of avoiding the prior art. Appellants’ arguments are not commensurate in scope with the claims. Claim 6 does not require that the islands be “degeneratively doped,” which is disclosed as rendering the islands conductive under all operating conditions. (See id.)

Appellants also argue that their disclosed process yields greater capacitance as compared to the prior art. (See Brief, pages 11 and 12.) The amount of capacitance, however, is not claimed.

Since appellants have not shown the rejection of Claims 6 through 8 to be erroneous, we sustain the Section 103 rejection of the claims.

Claim 9

Appellants argue that Claim 9 “calls for the steps of forming islands of polysilicon, and degeneratively doping these islands to render them conductive.” (Brief, page 16.) The steps are “neither taught nor suggested by the cited references.” (Id.)

The examiner responds that both Matsueda (see Answer, page 7) and Morozumi (see id. at 9) teach “degenerative doping.” However, neither reference uses the term “degenerative doping.” Nor does the examiner explain what the term is understood to mean, other than the implication, as set out for example on page 7 of the Answer, that the MOS capacity having the “same type of conductivity” as the TFT in the reference refers to “degenerative doping.” We agree with appellants that the “type of conductivity,” in the context of Matsueda, merely refers to the type of charge carriers -- whether the doping is of “n-type” or “p-type.”

Appellants do not provide a definition of “degenerative doping” in the Brief. However, we note that when the term was added to Claim 9 appellants submitted that it is a term of art, understood to mean “doping carried out to the extent that the resultant doped material is electrically conducting under all circumstances, regardless of the bias conditions.” (Appellants’ Remarks submitted with the amendment filed July 13, 1994 (Paper No. 4), page 7.) Appellants’ specification (page 8, lines 12 through 14) states that “the island is degeneratively doped either n or p type in order to render it conducting under all operating conditions.”

We have performed a text search for the term “degenerative doping,” and terms related thereto, in a database composed of U.S. patents and have identified U.S. Patent 3,633,078 (to Dill et al.), which discloses structure of a field-effect transistor:

This doping (or introduction into the structure of the silicon gate member...of such an impurity) may be carried out to such an extent that the silicon gate member exhibits properties more akin to those of a conductor of electricity than a

nonconductor. Such extensive doping to achieve the conversion from a semiconductor to a conductor member is well known in the art and is referred to as degenerative doping.

U.S. Patent 3,633,078, column 3, lines 55 through 62.

We have identified other patents which suggest that the term “degenerate,” in referring to semiconductor material, is related to “degenerative” doping. For example, the following section appears in U.S. Patent 5,338,944 (to Edmond et al.):

As used herein, the term "degenerate" has its ordinary meaning; i.e., a semiconductor material which has been extremely heavily doped with desirable impurities to give it a certain type of conductive character; i.e., a character which is more in the nature of a conductor than a semiconductor.

U.S. Patent 5,338,944, column 4, lines 13 through 18.

Thus, there is extrinsic evidence to support appellants’ view that the Claim 9 limitation of “degeneratively doping these islands, thereby to render the islands conductive” would have been understood by the artisan to mean extensive or heavy doping that was beyond the norm. Since the references upon which the rejection is based do not describe “degenerative” doping, and the examiner has not otherwise persuasively explained how the recitations of Claim 9 may be disclosed or suggested by the references, we do not sustain the Section 103 rejection of Claim 9.

CONCLUSION

The rejection of Claims 6-8 is affirmed.

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The rejection of Claim 9 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
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)	
HOWARD B. BLANKENSHIP)	
Administrative Patent Judge)	

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